

southward migration, the Island of Cuba would be crossed at the *night*.

Geothlypis macgillivrayi in summer occupies the Middle and Western states ; and its migration in winter would appear to involve no long sea-flight like that of its eastern neighbour. In winter it spreads over Mexico and Guatemala, and thence to Costa Rica, and as far southward as Chiriqui. Here, however, it seems to stop, and does not pass onwards into the southern continent. From this it will be seen that individuals of the two species are found together during the winter months in Costa Rica, but only within the small territory of that republic. On the return of spring the one would prepare for its long flight over the sea, the other to follow the Cordillera northwards, towards their respective summer abodes.

The migration of *G. philadelphia* is not without parallel amongst the birds of the Eastern States. The line of migration of *Dendræca castanea* is almost identical ; for though its occurrence has been noted in Guatemala, I never obtained a specimen ; at Panama, however, it is by no means rare in winter. *Dendræca cærulea*, too, takes a similar line ; but individuals seem occasionally to touch at Cuba, and some (if the specimens cited by Baird have the localities correctly marked) find their way to Guatemala.

These, and others that might be quoted, seldom touch on the West Indies in their flight, but pass onwards for more southern lands to find their winter homes.

XIX. *Contribution to the History of the Blue Crow of America.*

By ELLIOTT COUES, M.A., M.D., Ph.D., etc.

GYMNOKITTA* CYANOCEPHALA.

Gymnorhinus cyanocephalus, Maxim. Reise, 1841, ii. 21 (French ed. iii. 296 ; English ed., 287, 297).

Gymnokitta cyanocephala, Bp. Consp. Av. 1850, i. 382 ; Cass. Ill. B. Cat. & Tex. 1854, 165, pl. 28 ; Newberry, Pac. R. R.

* *Gymnorhinus*, Maxim., 1841, if sufficiently distinct from *Gymnorhina*, Gray, 1840 ; if the difference in termination be not enough, then *Cyanocephalus*, Bp., 1842 ; but if preoccupation in botany precludes, then, failing both these names, *Gymnokitta*.

Rep. vi. pt. iv. 1857, 83 ; Baird, *ibid.* ix. 1858, 574 ; Kennerly, *ibid.* x. 1859, Birds, 32 ; Coues, Pr. A. N. S. Phil. 1866, 91 ; Cooper, B. Cal. 1871, 292.

Psilorhinus cyanocephalus, Gray.

Nucifraga (*Gymnokitta*) *cyanocephala*, Gray, Hand-list, ii. 1870, 10.

Cyanocorax cassini, McCall, Pr. A. N. S. Phil. v. 1851, 216.

"*Cyanocephalus wiedi*, Bp." Gray, H.-list, ii. p. 10*.

Generically distinguished by the combination of an ordinary corvine form (pointed wing longer than nearly even tail, and tarsus longer than medius digit) with the usual garruline colour (blue), one character uncommon in either subfamily (complete nakedness of nostrils), and a particular shape of bill (nearly as in certain Icteridæ) ; standing next to *Picicorvus*, related by this and by *Nucifraga* to the true Crows, and to the Jays by *Psilorhinus*.

Dull blue, nearly uniform, but much brighter on the head, paler on the abdomen ; chin and throat streaked with whitish ; remiges internally fuscous ; bill and feet black ; iris brown. ♂, 11–12 inches long ; extent of wings 16·5–19·5 ; wing 5·5–6·0 ; tail 4·0–4·5 ; bill (along culmen) about 1·33 ; tarsus (in front) about 1·66 ; medius digit (with claw) about 1·33. ♂ similar, but usually duller in colour, and smaller ; length 10·5–11·5 ; extent 15–17, &c. Newly fledged birds are commonly smaller still, and show little blue, being mostly dusky grey. Independently of seasonal, sexual, or other definite conditions, there is a great difference in the purity and intensity of the blue ; that of the head is sometimes sharply contrasted with the paler shade of the back, and sometimes fades insensibly into the latter. The whitish gular streaks are sometimes faintly indicated ; sometimes they are very strong, and even extend on the breast. The abdomen is frequently greyish white, with barely a shade of blue. The remiges wear from fuscous to grey.

This rather remarkable type appears to have been first noticed in 1841 ; and the brief synonymy it has since acquired results more from different interpretation of rules of nomenclature than

* [At Dr. Coues's request we have searched for this reference, but in vain. Mr. Gray gives its date as 1842.—ED.]

from conflicting views of its systematic position. To our opinion upon this latter point, already expressed, we have only to add that we hold the bird to be *sui generis*, while conceding its close relationships to neighbouring forms. So far as we know, only two nominal species have hitherto been instituted at its expense ; one of these we are obliged to quote on Gray's authority. Since the Prince von Wied's notices, which appeared in German, French, and English, the literature of the subject is mainly represented by Mr. Cassin's valuable article, accompanied by a characteristic figure, Prof. Baird's accurate description, both generic and specific, and the partial biographies of several naturalists who met with the bird alive. For many years the species was considered a rarity, to be highly prized, and may still remain among the *desiderata* of many or most European collections ; but of late a great many specimens have been gathered, notably in California, by the late Capt. John Feilner, of the Army (in whose death, at the hands of hostile Indians, ornithology lost a zealous and judicious collector), and in Arizona by ourselves.

The Prince's original examples are stated to have come from one of the tributaries of the Upper Missouri, in the then extensive territory of Nebraska, which locality, if not beyond the bird's ordinary range, is certainly far from its centre of abundance, for which we must turn some degrees south-westward. Dr. Hayden, who explored the same section of country with signal ability and success, does not appear to have met with it ; and we judge, upon several considerations, that Maximilian's quotation may indicate very nearly the north-east extension of the species. This impression of ours is strengthened, if not confirmed, by the fact that the north-eastward dispersion of *Picicorvus columbianus* has proved nearly coincident ; for, as may be gathered by comparing the present article with one upon *Picicorvus* which we had the pleasure of laying before the readers of 'The Ibis,' these two birds occupy essentially the same faunal area in altitude as well as in latitude. General MacCall, then Inspector-General of the Army, found his "*Cyanocorax cassini*" abundant near Santa Fé, in New Mexico (alt. 7000 ft. ; lat. 35° 41' N. ; long. 106° 2' W. Greenw.). Dr. C. B. R. Kennerly, whilst attached to Lieut. Whipple's Survey of the 35th parallel,

across New Mexico and Arizona, fell in with great numbers of the birds in the first mentioned territory, near San Miguel and at Fort Webster; and these New-Mexican citations are checked by the records of several other naturalists. Captain Feilner procured his fine suite of skins at Fort Crook, in Northern California. Our Oregon reference is principally Dr. J. S. Newberry, whose well-known important geological researches in the west are admirably supplemented by his observations in other departments of science. Referring to the bird's occurrence in the Des-Chutes basin, this naturalist further remarks:—"The fauna and flora of this district, as well as all its climatic and geographic conditions, connect it with the central desert of the continent, a region lying along the Rocky Mountains on either side, characterized by an arid climate and sterile soil, by plains covered with *Artemisia* and ridges of trap rock, on which grow the western cedar (*Juniperus occidentalis*) and the yellow pine (*Pinus brachyptera*). The black-tailed deer (*Cervus macrotis*), the badger (*Taxus labradorius*), Townsend's hare, the little *Lagomys*, and striped *Spermophile* are its most characteristic quadrupeds; the Sage Hen (*Centrocercus urophasianus*), Townsend's *Ptilogonys*, and Prince Maximilian's Jay, some of its peculiar birds." The Washington territory records are silent in this case; but we rather anticipate data from this quarter corresponding somewhat to the observations there of Dr. Cooper and of Suckley, if not also of Mr. Lord, upon *Picicorvus*; for in other directions, as we now see, reports of the two birds are strikingly coincident. In respect of altitude, that of *Gymnokitta* may be a little lower; but we doubt this: and if it has not yet been seen so high up mountain-peaks as *Picicorvus*, the evidence is still only negative. In a word, it is essentially a bird of the coniferous zone of vegetation, within the geographical area just indicated,—eastward, to the foothills and spurs of the Rocky Mountains, westward to the opposite slopes of the Cascade and coast ranges: while to the north it has not been traced as far as the *Picicorvus* (Sitka), to the south it remains, like *Picicorvus*, undiscovered on the *tierra fria* of Mexico. It breeds at or near the terminus of its altitudinal dispersion, ascending in winter to, if not a little beyond, the pine belt.

At Fort Whipple, in Arizona, where our personal observations were made, the bird may be considered a permanent resident : though we did not observe it breeding in the immediate vicinity, it nests) as we know from the circumstance of finding newly fledged young in July) in the neighbouring and more elevated San Francisco and Bill Williams Mountains. We were never so fortunate as to discover its nest, and believe that its nidification remains unknown. Like most of its tribe—in fact, like most birds largely subsisting on varied animal and vegetable food—it is not strictly migratory ; for it finds nourishment in winter anywhere, except perhaps at its highest point of dispersion ; and a descent of a few thousand feet from mountain-tops appears to answer the purpose of the southward journey that migratory species perform, as far as food is concerned, while its hardy nature enables it to endure the rigours of winter in regions frequently snow-bound.

We may safely check the conflicting testimony respecting this bird's food (indeed we must do so) by simply crediting it with the omnivorous nature that is a strong and nearly exceptionless trait of the family *Corvidæ*. Thus Dr. Kennerly says :—“ Its food appears to be exclusively reptiles ;” * * * the flocks he saw * * * “ constantly alighted on the ground, for the purpose, as I [he] ascertained, of capturing lizards, which they killed with great readiness ;” and Mr. Cassin reasons, upon his correspondent's accounts, that “ it does not appear to be in any considerable degree a fruit-eater, but is decidedly carnivorous and almost rapacious ;” and further draws an analogy with the reptilivorous Kingfishers (*Todiramphus*). But this is going too far ; and we will hear the other side. Dr. Newberry saw the birds “ feeding on the berries of the cedar (*Juniperus occidentalis*) ;” and one that he killed “ had the œsophagus filled with the seeds of the yellow pine.” Our own testimony, emphatic and unreserved, is to the same effect. According to our two years' observations the bird feeds principally upon juniper berries and pine seeds, also upon acorns, and probably other small hard fruits ; and during the winter, when they were particularly numerous at Fort Whipple, they could not possibly have eaten reptiles ; for no serpents, lizards, or frogs are abroad at that season. Truly

we never saw one capture a reptile ; but this, so far from impugning Dr. Kennerly's evidence, simply brings us back to the opening sentence of this paragraph. The particular shape of the bill may indicate something in the bird's regimen that we do not yet exactly understand ; but, after all, the bill is not so very different from that of *Picicorvus*, and our observations show an extremely close similarity in the modes of life of the two species. If required, upon the evidence of reptilivorous habits, to draw a parallel, in some other family, with *Gymnokitta*, we might instance one of the Saurotherinæ, such as *Geococcyx californianus*, in contrast with ordinary arboricole Cuculidæ.

Notwithstanding its essentially corvine form, the habits of this bird, like its colour, lean hard upon those of Jays. Like these last, it is a garrulous, vociferous creature, of various curiously modulated chattering notes when at ease, and of extremely loud harsh cries when in fear or anger. The former are somewhat guttural ; but the latter possess a resonance different alike from the hoarseness of the screams of *Cyanura macrolopha* and the wiry sharpness of the voice of *Cyanocitta woodhousii*. Like Jays, again, it is a restless, impetuous bird, as it were of an unbalanced, even frivolous mind, its turbulent presence contrasting strongly with the usually poised and somewhat sedate demeanour of the larger black *Corvi*. With these last, however, it shares a strong character—its attitudes when on the ground, to which it very frequently descends, being crow-like, and its gait, an easy walk or run, differing notably from the leaping mode of progression that is habitual with Jays. When perching, its customary attitude is rather stiff and prim, if indeed not quite so erect as Mr. Cassin's figure indicates. It shares, with its relatives on either side of the family, a shy and watchful disposition. Its flight is most nearly like that of *Picicorvus*. Perhaps gregariousness is its prominent distinctive trait. Immense as the gatherings of Crows frequently are, this seems rather due to community of interest than to a true social instinct ; each individual looks out for himself, and the company disperses for cause as readily as it assembles. It is different with these small Jay Crows ; they "make up" in flocks, sometimes of surprising

numbers, usually keep as close together as Blackbirds*, and move as if actuated by a common impulse. Their dispersion, as usual, is marked, if not complete, during the breeding-season; but the flocks reassemble as soon as the yearlings are well on wing; and from this time, until the following spring, one may more often see a hundred, or several hundreds, together than fall in with single birds. As we have elsewhere stated, we have witnessed a gathering of probably a thousand individuals, a sight that recalled Dr. Latham's statement respecting flocks of twenty thousand *Cyanura cristata*, with the thought that he would have come at any rate *nearer* the truth, and been less deserving of Wilson's sarcasm, could he have set down such figures against *Gymnokitta cyanocephala*.

XX.—*Notes on the Resident and Migratory Birds of Madeira and the Canaries.* By F. DU CANE GODMAN, F.Z.S. &c.

A VISIT to Madeira or the Canaries in early spring is, I think, one of the most enjoyable things one can imagine. Leaving behind the cold disagreeable weather we usually experience at that time of the year in England, in rather more than a week one finds one's self in a warm and genial climate, surrounded by most lovely scenery and a semitropical vegetation, which much more than compensate for the discomfort of the voyage.

In March last year I paid a visit to these islands, and gave special attention to their ornithology, making a collection of all the birds I could procure; and in the following paper I propose to relate the results of my observations during the excursion, together with all the information I can glean from other sources, so as to make it as complete as possible; and I trust it may not be without interest to the readers of 'The Ibis.'

These two groups of islands present no new field to the naturalist; and there are few of our countrymen, at all events, who are not acquainted with the various works of Mr. Wollaston founded on his indefatigable labours and interesting discoveries, the result of which has been to bring to light so many hitherto unknown and remarkable forms, especially amongst the Coleoptera. MM. Webb and Berthelot, too,

* [*Molothrus*.—ED.]